

1 --1. (Twice Amended) A process for fabricating a semiconductor device having
2 a buried layer comprising the steps of:
3 forming a buried implanted impurity ion region at a location which is
4 spaced below a surface of a substrate where a buried layer is to be formed in the
5 substrate;
6 placing the substrate inside a reactor furnace and, while maintaining the
7 substrate in the reactor furnace;
8 providing a non-oxidizing atmosphere inside of the reactor
9 furnace;
10 annealing the substrate to activate implanted impurity ions and
11 diffuse the buried implanted impurity ion region both upwardly and downwardly
12 from the location below the surface of the substrate while increasing the internal
13 temperature of the reactor furnace up to a first temperature; and
14 before the buried ion implanted region beneath the surface of the
15 substrate expands upwardly sufficiently to reach the surface of the substrate,
16 changing the internal temperature of the reactor furnace from the first temperature
17 to a second temperature at which an epitaxial crystal starts to grow on the surface
18 and introducing an epitaxial growth gas into the reactor furnace to cause an
19 epitaxial layer to grow on the surface of the substrate, thereby inhibiting
20 autodoping and formation of crystal defects in the epitaxial layer; and
21 then removing the substrate from the reactor furnace.--